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859 Peripheral Inflammation Facilitates Aβ Fiber-Mediated Synaptic Input to the Substantia Gelatinosa of the Adult Rat Spinal Cord
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868 ***Correction:*** In the article, "Upregulation of L-Type Ca^{2+} Channels in Reactive Astrocytes after Brain Injury, Hypomyelination, and Ischemia," by R. E. Westenbroek, S. B. Bausch, R. C. S. Lin, J. E. Franck, J. L. Noebels, and W. A. Catterall, which appeared on pages 2321–2334 of the April 1, 1998 issue, in Figure 2 (page 2324) panels *A* and *D* are duplications of the same image. A revised version of Figure 2 with the correct panel *D* is printed here. The original description of the experiment and the results is correct, and all of the other images are unchanged.

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1932 Temperature-Dependent Modulation of Excitatory Transmission in Hippocampal Slices Is Mediated by Extracellular Adenosine
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1940 Akt-Dependent Potentiation of L Channels by Insulin-Like Growth Factor-1 Is Required for Neuronal Survival
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1952 Distinct Signaling Pathways Mediate Touch and Osmosensory Responses in a Polymodal Sensory Neuron
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1959 RNA Oxidation Is a Prominent Feature of Vulnerable Neurons in Alzheimer's Disease
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1965 Myelin and Collapsin-1 Induce Motor Neuron Growth Cone Collapse through Different Pathways: Inhibition of Collapse by Opposing Mutants of Rac1
Thomas B. Kuhn, Michael D. Brown, Christine L. Wilcox, Jonathan A. Raper, and James R. Bamburg

1976 Mechanisms of Calcium Influx into Hippocampal Spines: Heterogeneity among Spines, Coincidence Detection by NMDA Receptors, and Optical Quantal Analysis
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1988 Modification of Postsynaptic Densities after Transient Cerebral Ischemia: A Quantitative and Three-Dimensional Ultrastructural Study
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1998 Metabolic Stabilization of Muscle Nicotinic Acetylcholine Receptor by Rapsyn
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2008 Glial Cell Line-Derived Neurotrophic Factor Rescues Target-Deprived Sympathetic Spinal Cord Neurons But Requires Transforming Growth Factor-β as Cofactor *In Vivo*
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2834 Lateralized Effects of Medial Prefrontal Cortex Lesions on Neuroendocrine and Autonomic Stress Responses in Rats
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2841 ***Erratum:*** In the article "Reciprocal Changes in the Firing Probability of Lateral and Central Medial Amygdala Neurons," by Dawn R. Collins and Denis Paré, which appeared on pages 836–844 of the January 15, 1999 issue, the reproduction quality of Figure 2 (page 838) was unsatisfactory. The figure is reprinted.

2842 ***Erratum:*** On the third page of the table of contents in the February 15, 1999 issue, the page numbers were incorrect for the articles by Cartmell et al., Pettorossi et al., and Rolls et al. and were not given in the legend to the cover picture. The page of the contents is reprinted.

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3275 ***Correction:*** In the article "Rapid, Activation-Induced Redistribution of Ionotropic Glutamate Receptors in Cultured Hippocampal Neurons," by Dmitri V. Lissin, Reed C. Carroll, Roger A. Nicoll, Robert C. Malenka, and Mark von Zastrow, which appeared on pages 1263–1272 of the February 15, 1999 issue, the *right panel* of Figure *5B* (page 1268) was incorrect. The figure is reprinted.

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7238 ***Erratum:*** In the article "The Ankle-Link Antigen: an Epitope Sensitive to Calcium Chelation Associated with the Hair-Cell Surface and the Calycal Processes of Photoreceptors," by Richard Goodyear and Guy Richardson, which appeared on pages 3761–3772 of the May 15, 1999 issue, a printer's error caused inadvertent artifacts in Figures 1, 7, 9, and 10. The figures and legends are reprinted.

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RC37(1–6) Src Potentiation of NMDA Receptors in Hippocampal and Spinal Neurons Is Not Mediated by Reducing Zinc Inhibition
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10191 ***Erratum:*** In the article "Neurobiological and Psychophysical Mechanisms Underlying the Oral Sensation Produced by Carbonated Water," by C. T. Simons, J.-M. Dessirier, M. Iodi Carstens, M. O'Mahony, and E. Carstens, which appeared on pages 8134–8144 of the September 15, 1999 issue, an incorrect version of Figure 6 was printed. The correct version of the figure and legend are printed here.

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